

REMARKS

This application has been reviewed in light of the Office Action dated April 29, 2008. Claims 1-15 and 17-19 are presented for examination, of which Claims 1, 8 and 12 are in independent form. Claims 1-15 and 17-19 have been amended to define still more clearly what Applicants regard as their invention. Claim 16 has been canceled without prejudice or disclaimer of subject matter, and will not be mentioned further. Favorable reconsideration is requested.

Before addressing the rejections of the claims, Applicants wish to respond to three other matters.

First, the translation of previously-cited JPA 8-256293 submitted on January 25, 2008, was not considered by the Examiner, as noted in paragraph 9 of the Office Action. Applicants note that the translation is simply provision of information not previously available, about a reference that has already been formally cited, and considered by the Examiner. Accordingly, the Examiner's refusal to consider it as allegedly not being properly cited in an Information Disclosure Statement is believed not to be correct. Nonetheless, to eliminate this as an issue, JPA 8-256293 itself is being cited in a new Information Disclosure Statement, and the translation in question is being supplied in connection therewith.

Second, the specification was objected to on the ground that certain headings in the specification are not presented all in capitals. MPEP § 608.01(a) provides that "37 CFR 1.77 Arrangement of application elements... (b) The specification should include the following sections in order: (1) Title of the invention... (12) "Sequence Listing," if on paper (c) The text of the specification sections defined in paragraphs (b)(1) through (b)(12) of this section, if applicable, should be preceded by a section heading in uppercase and without underlining or bold

type.” Applicant believes that the MPEP is referring only to the headings of the specification sections defined in paragraphs (b)(1) through (b)(12), not to all subsidiary headings adopted for clarity’s sake. The headings of those specification sections in the present application are already in upper case in accordance with the MPEP, and withdrawal of the objection to the specification is respectfully requested.

Figure 1 was again objected to as not being labeled “prior art”. Applicants have added to the specification a clarification that, at the level of detail shown in Fig. 1, that embodiment of the invention has the same structure as that illustrated in Fig. 11; it is believed that the explanation of the embodiment is clearer with Fig. 1 included than if that figure were to be canceled, and at the same time, it is thought that it would be confusing to the reader for Fig. 1 to be labeled as prior art. Accordingly, reconsideration and withdrawal of this objection is respectfully requested.

Claims 1, 12 and 19 were objected to based on various informalities noted in paragraphs 13-15 of the Office Action. Applicants have carefully reviewed and amended the claims with special attention to the points raised in those paragraphs. It is believed that the above-mentioned objections to the claims have been obviated and their withdrawal is, therefore, respectfully requested.

Claims 8, 10 and 19 were rejected in paragraphs 16-17 of the Office Action under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicants have carefully reviewed and amended the claims with special attention to the points raised in those paragraphs. It is believed that the above-mentioned rejections of the claims have been obviated and their withdrawal is, therefore, respectfully requested.

Claims 1-6, 8-15 and 17-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,973,311 (Sauer et al.). In addition, Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Sauer* in view of WO 03/049190 (using U.S. Application Publication US 2004/0195490 (Sugiyama)) as a translation.

As discussed in the specification, the present invention is directed to an inexpensive and high-performance radiation image pick-up system allowing both high-sensitivity image pick-up and low-sensitivity image pick-up depending on the needs. For example, still image photographing involves a high dosage of exposure to radiation and hence the required sensitivity is relatively low, while moving image photographing involves a low dosage of exposure to radiation and hence the required sensitivity is relatively high.

In one embodiment of the present invention, such an image pick-up system consists of a plurality of pixels. In each pixel, there is a photoelectric conversion element for converting incident radiation into electric charges (see Unit 11 in Fig. 3). The output of the photoelectric conversion element may run through one of two distinct wirings, each consisting of a signal reading line (Units 14a or 14b in Fig. 3) connecting appropriate semiconductor elements (Units 21 for Unit 14a or Units 22 and 23 for Unit 14b in Fig. 3) with the signal output circuit (Unit 3 in Fig. 2). There are also two gate lines (Unit 13a for Unit 21 and Unit 13b for Units 22 and 23 in Fig. 2) connecting the scanning unit (Unit 2 in Fig. 2) with the two wirings, respectively.^{1/}

Within a pixel, incident light is converted into electric charges by the photoelectric conversion element, which can then travel via one of the two wirings, which

^{1/} It is of course to be understood that the claim scope is not limited by the details of this or any other particular embodiment that may be referred to.

correspond to high sensitivity and low sensitivity, respectively. The scanning circuit performs the wiring selection according to a radiographing mode that is being used (still-image vs. moving image, for example), which causes the semiconductor elements on the selected wiring to be active and the current to flow through the corresponding signal reading line to eventually reach the signal output circuit.

More specifically, independent Claim 1 is directed to a radiation image pick-up device that comprises a plurality of pixels disposed in a matrix, each of the pixels including a photoelectric conversion element for converting incident radiation into electric charges, a scanning circuit for scanning the pixels, a signal output circuit for outputting signals from said pixels, and a plurality of signal reading wirings through which the pixels and the signal output circuit are connected to each other, with a respective one of said signal reading wirings being provided for each row of the pixels arranged along a first direction of the matrix. According to Claim 1, each of the pixels includes a semiconductor element connected to a respective one of the signal reading wirings, and the semiconductor element is selected by means of the scanning circuit according to a radiographing mode that is being used. Also, according to Claim 1, the signal reading wiring through which the semiconductor element is connected is selected based on an actuation of that semiconductor element.

According to the aspect of the present invention to which Claim 1 is directed, a plurality of signal reading wirings 14a and 14b through which a pixel 6 and a signal output circuit 5 are connected to each other are provided for each row of the pixels arranged along a first direction of the matrix. The pixels 6 of the rows arranged along a first direction (in a vertical direction in Fig. 2) are connected through the plural signal reading wirings 14a and 14b to the signal output circuit 5. Each of the pixels includes semiconductor elements connected to each of

the signal reading wirings. Each of the semiconductor elements is selected by controlling an operation of said scanning circuit. And, each of the signal reading wirings is selected based on an actuation of at least one semiconductor element by the scanning circuit. Thus, with a device constructed in accordance with Claim 1, freedom of a photographing operation can be provided.

Applicants submit that none of the above cited documents discloses or suggests the above described feature a plurality of signal reading wirings (14a and 14b) through which a pixel (6) and a signal output circuit (5) are connected to each other are provided for each row of the pixels arranged along a first direction of the matrix, as recited in Claim 1.

According to *Sauer*, a high resolution mode for outputting a signal of each pixel, and a low resolution mode for outputting a signal formed by adding pixel signals from two adjacent pixels are used. In order to achieve such two modes, according to *Sauer*, a switch is provided for adding the pixel signals of the adjacent two pixels. However, according to *Sauer*, as is apparent from Fig. 5, the signal line 2 is not provided separately for a single row of the pixels 22, but for two adjacent rows. Applicants submit that *Sauer* fails to disclose the plural signal reading wirings (such as 14a and 14b) separately provided for each single row of the pixels as recited in Claim 1. Accordingly, the above advantage of the freedom of the photographing operation cannot be attained with the *Sauer* structure.

For at least these reasons, Claim 1 is believed to be clearly allowable over the art cited against it.

Independent Claims 8 and 12 are to a method using the device of Claim 1, and to a system incorporating a device having most of the features of Claim 1, and the foregoing arguments apply to Claims 8 and 12 as well as to Claim 1.

A review of the other art of record, including *Sugiyama*, has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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